

***Zfp407* Cas9-CKO Strategy**

Designer: Xueting Zhang

Reviewer: Daohua Xu

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Project Overview

Project Name

Zfp407

Project type

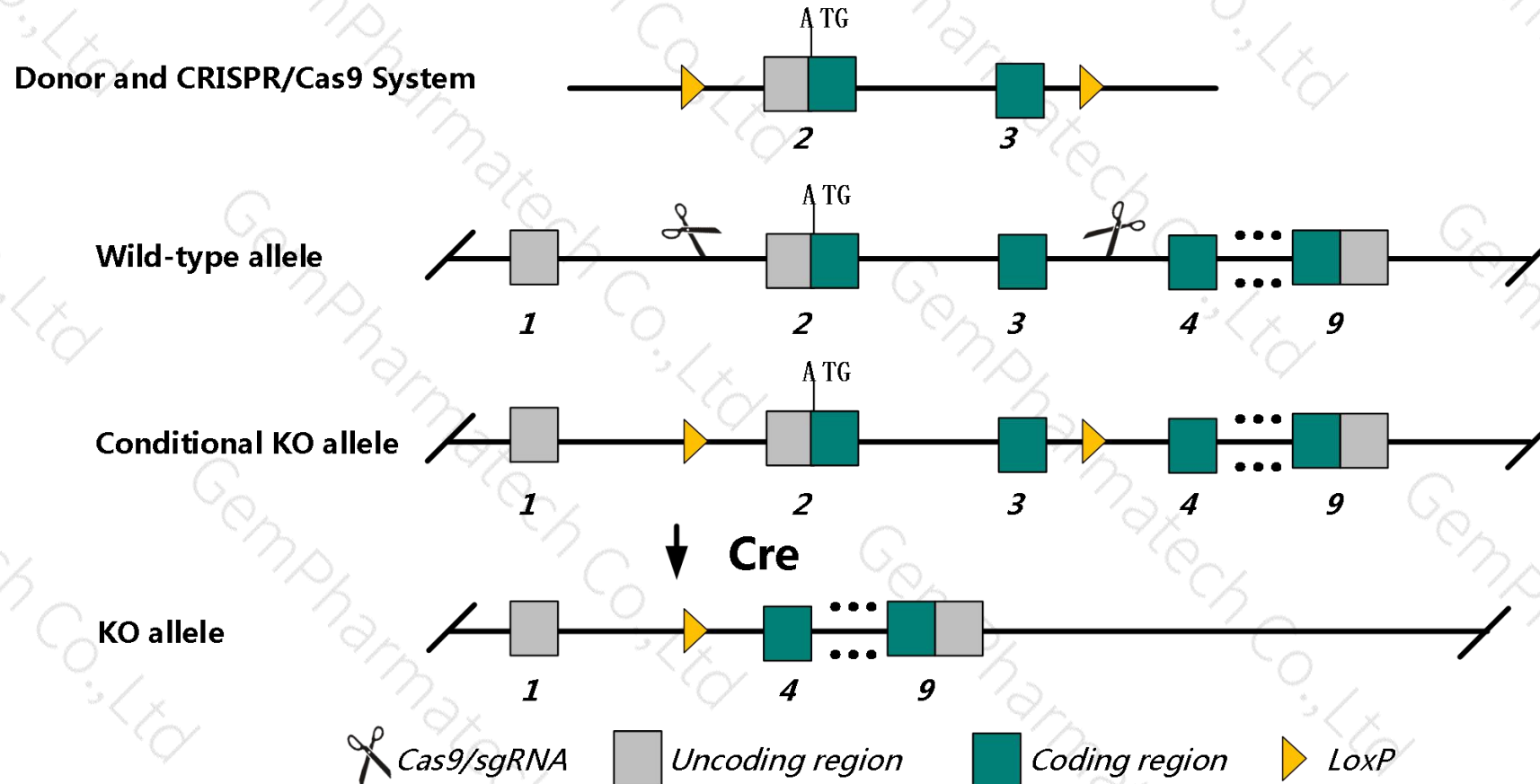
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zfp407* gene. The schematic diagram is as follows:



- The *Zfp407* gene has 6 transcripts. According to the structure of *Zfp407* gene, exon2-exon3 of *Zfp407*-202(ENSMUST00000125763.2) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Zfp407* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA and Donor were microinjected into the fertilized eggs of C57BL/6JGpt mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.
- The flox mice was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit failure of blastocyst formation and complete embryonic lethality before implantation.
- The transcript of *Zfp407-203&206* may not be affected.
- The effect on transcript *Zfp407-201* is unknown.
- The *Zfp407* gene is located on the Chr18. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.
- This strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Zfp407 zinc finger protein 407 [Mus musculus (house mouse)]

Gene ID: 240476, updated on 13-Mar-2020

Summary



Official Symbol [Zfp407](#) provided by [MGI](#)

Official Full Name [zinc finger protein 407](#) provided by [MGI](#)

Primary source [MGI:MGI:2685179](#)

See related [Ensembl:ENSMUSG00000048410](#)

Gene type protein coding

RefSeq status VALIDATED

Organism [Mus musculus](#)

Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as 6430585N13Rik, Gm333, Gm334, Gm948, ZNF407

Expression Ubiquitous expression in placenta adult (RPKM 1.6), CNS E11.5 (RPKM 1.6) and 28 other tissues [See more](#)

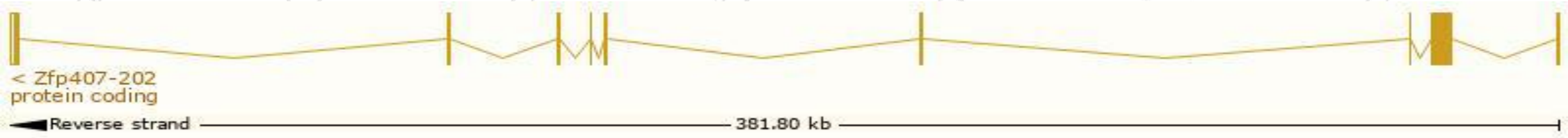
Orthologs [human all](#)

Transcript information (Ensembl)

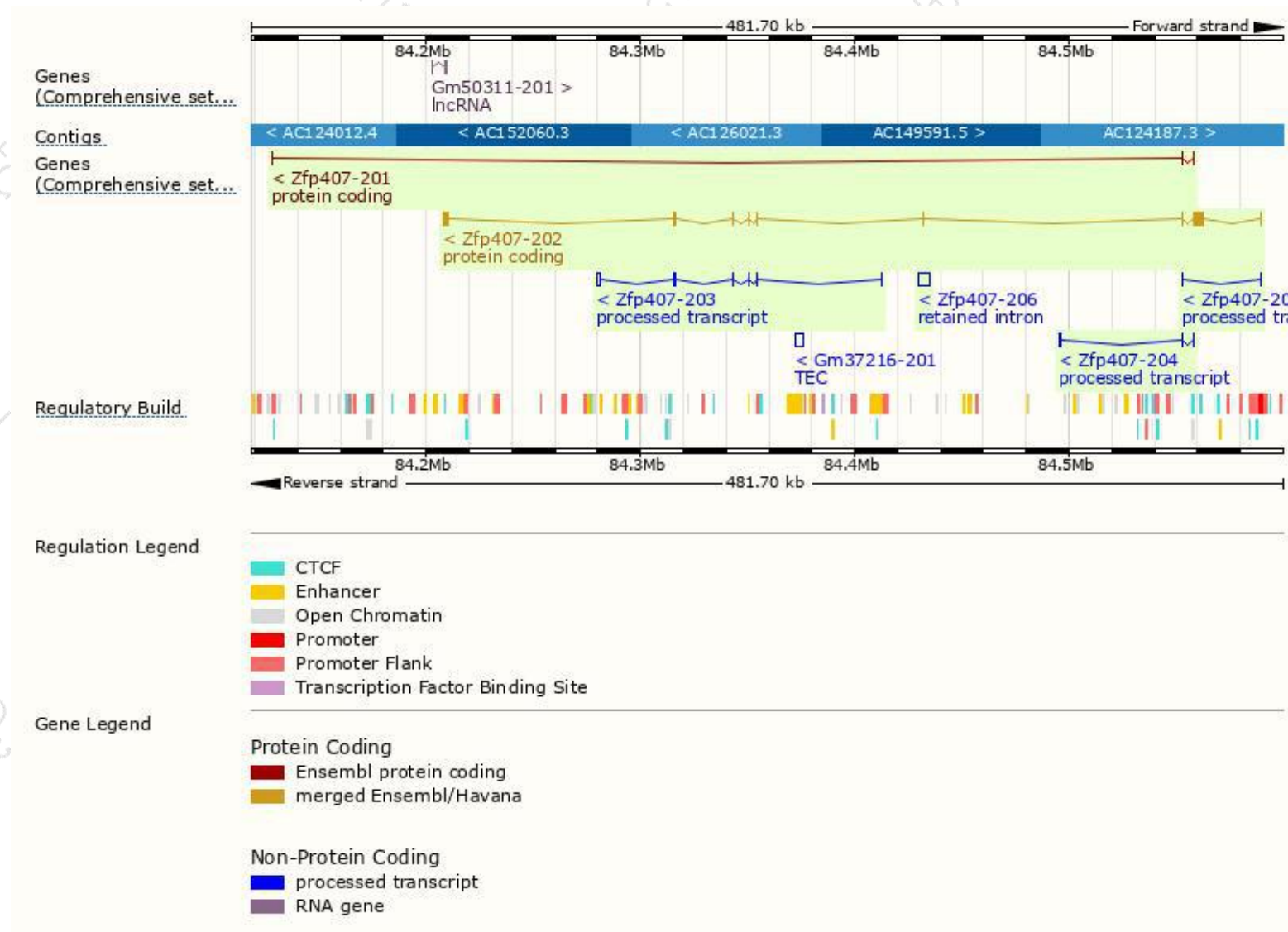
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zfp407-202	ENSMUST00000125763.2	7909	2246aa	Protein coding	CCDS50338	G3UVV3	TSL:5 GENCODE basic APPRIS P1
Zfp407-201	ENSMUST00000125450.8	541	72aa	Protein coding	-	S4R2G4	CDS 5' incomplete TSL:3
Zfp407-203	ENSMUST00000143597.1	2126	No protein	Processed transcript	-	-	TSL:1
Zfp407-204	ENSMUST00000156181.1	428	No protein	Processed transcript	-	-	TSL:5
Zfp407-205	ENSMUST00000182297.1	364	No protein	Processed transcript	-	-	TSL:3
Zfp407-206	ENSMUST00000182849.1	4949	No protein	Retained intron	-	-	TSL:NA

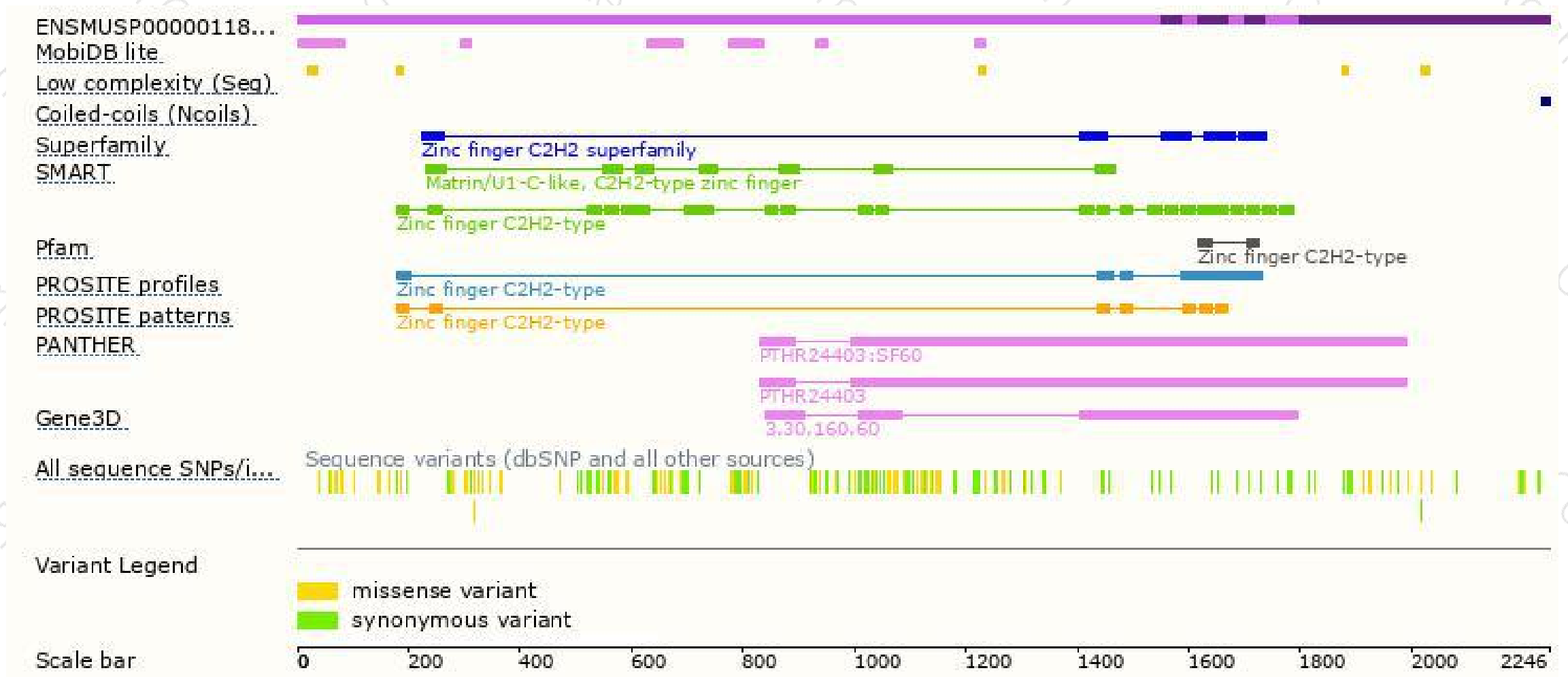
The strategy is based on the design of *Zfp407-202* transcript,the transcription is shown below:



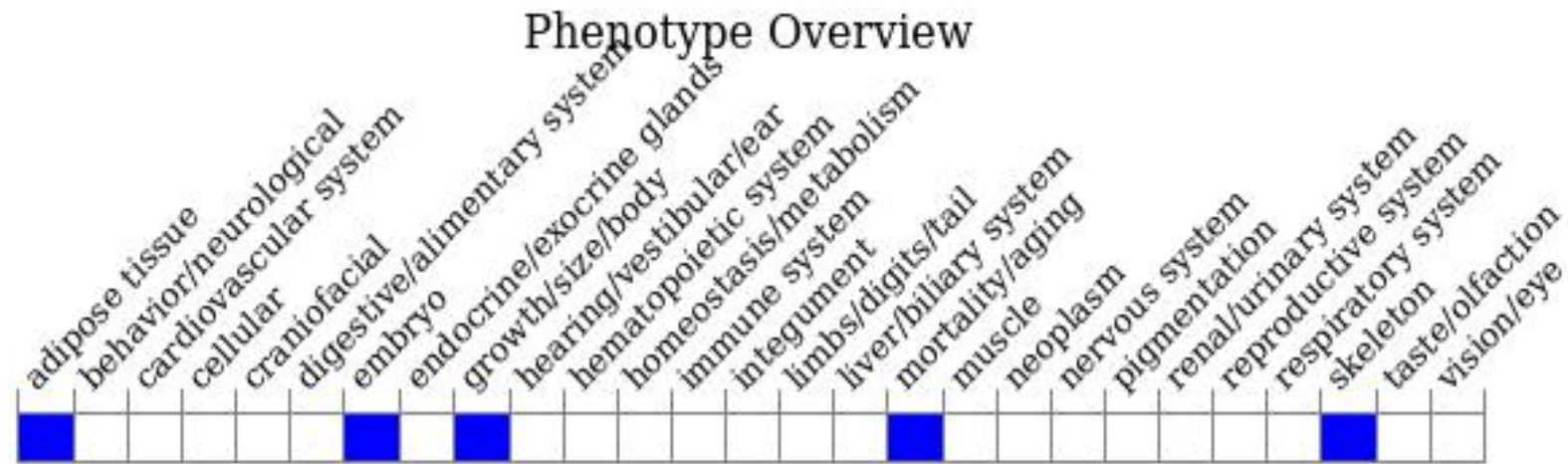
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

According to the existing MGI data, mice homozygous for a knock-out allele exhibit failure of blastocyst formation and complete embryonic lethality before implantation.

If you have any questions, you are welcome to inquire.

Tel: 025-5864 1534

